

III. WOOD: THERAPEUTICS.

A TREATISE ON THERAPEUTICS, COMPRISING MATERIA MEDICA AND TOXICOLOGY. With especial reference to the application of the Physiological Action of Drugs to Clinical Medicine. By H. C. Wood, Jr., M. D., Professor of Botany and Clinical Professor of Diseases of the Nervous System in the Medical Department of the University of Pennsylvania, etc. Second edition, Revised and Enlarged. Philadelphia: J. B. Lippincott & Co. Chicago: W. B. Keen, Cooke & Co. 675 pages.

There are two relations, under either of which a work like the present may be surveyed. We may give attention on the one hand to the individual facts, as such, or particular results obtained, their trustworthiness, without special reference to their relations, and also to the methods of research employed in procuring them, whether scientific or literary; or, on the other hand, to the character of the scientific and logical analysis to which they have been subjected, with the aim of determining their mutual relations, that they may be systematically arranged in accordance therewith, and that the most general statements, or truths respecting them, may be made known. This latter kind of work naturally pre-supposes the former, that is: the acquisition and verification of individual facts.

These two modes of viewing a subject,—say like the present one,—are so far from being identical, that a person may be highly accomplished as an observer of things or as a discoverer of facts in the domain of the physical and natural sciences, and yet prove signally weak in his generalizing or speculative capacities, and it is necessary to recognize that the opposite may occur.

Works are therefore written which may be rich, as store-houses of facts, well observed and carefully verified, but sadly deficient in their analytical scientific treatment. The mere accumulation of facts, it is hardly necessary to remark, is not science; it is only the first step toward it, though an indispensable one.

Science is definite, *systematized* or *generalized* knowledge. The work of generalization, as it is the last in a true logical, or even chronological order in the development of a science, is also the highest, for it involves not so much the exercise of the powers of observation or of sense perception, as those of thought. The higher the process of true generalization the higher and more comprehensive the thought.

It is a perfectly legitimate procedure to examine a work in any department of science, from "either or both of these stand-

points. And we now propose to briefly examine this of Dr. Wood from both.

What, then, are its merits and peculiarities, if any, as they appear from the systematic point of view? To what extent, and with what success, has Dr. Wood conducted the complementary processes of analysis and synthesis of his materials in framing a therapeutical system?

Under this head there are but *eight lines* professedly devoted to statements touching the system to be adopted in the work, unless we include in it the mere scheme of classification which itself occupies less than one page. We quote it as follows:

"At present all that, in my opinion, can be reasonably demanded of *any system*, (of therapeutics and pharmacology) is, that it is to be a convenient row of pegs upon which to hang our ideas and facts, so that they may be easily retained, and be easily accessible when wanted. Under these circumstances I venture to offer, as the basis of the present treatise, without further comment, the following clinico-physiological classification, founded upon, but very different from, that of Prof. George B. Wood." Page 23.

Before passing on to notice his system with some detail, we feel that a few remarks are in order on the passage we have just quoted.

Undoubtedly perfect systems of classification require, in respect to a given subject, a perfect knowledge of all the phenomena or facts to be classified, and of their various relations. Otherwise systems of classification must be more or less imperfect, or provisional. Certainly our knowledge of medicinal agents, and their modes of action is far, very far from being perfect, and hence a perfect therapeutic system is not to be expected. But such an admission will not justify the virtual surrender of all attempt toward framing a system worthy of the name, as is done by Dr. Wood in the preparation of this work. An author is privileged to write as he pleases, but he is also obliged to take the consequences.

For ourselves we take the liberty of denying in respect to scientific therapeutics, that all that "can be *reasonably* demanded of *any system* is that it shall be a convenient row of pegs upon which to hang our ideas and facts." Such a declaration it would seem, can only be the outcome of a study of the teeth and toenails, or externals of such a subject, rather than of analytic reflection on its finer, and more interior relations. Dr. Wood's idea of a system, in the present case, does not rise above the level of a mere provisional *classification*, with no vital bonds of connection between the ill-defined groups or classes which compose it.

It is in our judgment a shame to the critical or reflective side of therapeutics, if it has not yet arrived at that pass, at which its generalities have more of vitality or fruitfulness, than mere "rows of pegs on which to hang our ideas and facts."

Is it not at last possible, by careful critical analysis and generalization to arrive at some principle or principles, which may not only serve as mere signs of classes of facts, but in some sense as rational guides to farther investigation, or for purposes of *scientific prevision*? If not yet recognized as possible, by those who have given themselves, professedly to such studies, we have no hesitation in declaring that, in our opinion, our scientific therapeutists, are living to a certain extent below the present possibilities of their science, if it can be said to be worthy of the name. Certainly this must be said of the work now before us. Though it is no part of our present purpose to discuss this subject at length, yet we cannot pass on, without an appeal to the details of the "system," itself, for a farther justification of the above strictures which are true; not alone of this work.

The most general division of remedies is into 1. "Drugs." 2. "Remedies which are not drugs." Eliminating the last of the two classes, drugs are divided, 1. "Into substances which act on the solids and fluids of the body." 2. "Substances which act externally to the body." Upon the first of these two sub-classes we will fix attention alone. It is in turn divided into two main classes. A. *General remedies.* B. *Local remedies.* Under the first are grouped eleven classes, and under the second sixteen.

Now what are the distinctive characteristics of "general" as distinguished from "local" remedies? There is not a word on this subject professedly in the volume, so far as we have been able to see. And it is only necessary for any one to consider and compare with some attention the classes arranged under the heads of *general* and *local* remedies, to see that the author could not have had clear notions himself as to the differences between them, if such exist. Every one, we presume, has a vague notion as to what the differences are, but they should find at least a brief expression in a work like this.

But to come to a few details: under the head of "general remedies" we find for example, "mydriatics," so called, because of their action on the iris. But why should such be placed in the general class, when we exclude from it "emetics?" Why include "cardiac sedatives," or "cardiac stimulants," under the head of general remedies, when we class as local remedies "cathartics" and "emmenagogues."

Then again remedies are grouped according to some of their more prominent clinical symptoms, a plan convenient for memorizing, but one which ignores practically in many cases, their more important physiological action. For example, he gives us a class of mydriatics, including belladonna, stramonium and hyoscyamus, while calabar bean, equally prominent for its opposite action, is very properly included in the depresso-motors. Then, again, he finds it impossible to put tartar emetic elsewhere than in the cardiac sedatives, though its emetic action and name are more familiar perhaps to the great majority of practitioners, and its use, in the minds of many at

the present time, is confined to diseases of the respiratory organs as an expectorant. Ergot finds no mention elsewhere than in a class by itself as an oxytocic; being classed according to an action it can only exert on a half of mankind, and under special conditions, while its other more general and very important uses are altogether unindicated in this arrangement. A classification which places amongst local remedies, agents, the physiological action of which on each system of organs of the body has to be mentioned, is, moreover, hardly to be called a perfect one, not as much so, indeed, as our present imperfect knowledge will admit of, in our opinion.

It may be necessary in a scientific classification of drugs, by their physiological and therapeutic actions, to encumber it with repeated mention of the same agent in different connections according to its effects on this or that organ or function. To a certain extent this is inevitable, and it is done in the present volume. But to have the classification made according to subordinate actions, so to speak, however prominent or familiar they may be, appears to us to be a reversal of the proper order.

But not to carry these remarks farther at present, we must explain, that we do not object, of course, to the use Dr. Wood has made of his personal liberty to omit from his work any discussion of the systematic aspect of therapeutics, but in giving utterance to the views we have quoted it seems to us he has misrepresented the actual possible state of the science, as we believe it might be under a more thorough analytic treatment. Viewed from the true systematic standpoint, we think the work of Dr. Wood is justly open to animadversions, from which even his openly avowed neglect should not be a protection. From this point of view his work is but little better than a collection of therapeutical essays, having the appearance rather than the fact, of organic unity, and in which the relations they sustain are mechanical rather than logical.

We will now turn to survey the work from the point of view of its being a collection of facts, and we would include in this view the methods by which the facts were obtained, and by which new facts are yet to be discovered. Both are excellent, and from this stand-point the work is the most suggestive, useful, and readable in our language, on the subject of which it treats. Its principal feature, and the one in which it differs from most others in our language, is the prominence it gives to the physiological action of the various therapeutic agents which it discusses. Other works give us, to be sure, some data in regard to the physiological effects of remedies, but in the main incidentally, and without giving this phase of the subject the prominence that it has in this one of Dr. Wood's, and that its importance demands. In the lengthy and interesting preface, Dr. Wood enters at some length, into an explanation and defence of physiological therapeutics which finds its opponents not alone in this country. The regular profession

has in its practice, if not altogether in its theory, tried the experiment of depending chiefly on *clinical experience* in therapeutics. The self evident proposition or law laid down by Dr. Wood that in this, as in other matters, we should have an acquaintance with the instruments we employ, has been practically ignored, or at least observers have been to a too great extent, willing to obtain this knowledge in the expensive way, as regards human comfort and even human life, of testing them on their patients.

Our knowledge of the action of remedies is not as yet, and may never be complete; and clinical evidence may always be required to supplement our knowledge acquired in other ways. We cannot, however, entirely agree with the author of the volume before us that this is unfortunate, except in the sense that it is so because we cannot on *a priori* grounds, prophesy the exact result of the administration of an agent in all cases. It would be truly unfortunate if all the experience of the past was fruitless of good results.

The method of scientific research by which therapeutics is to arise from being merely an empirical art, to a really scientific and rational procedure, is as Dr. Wood says, by experimentation upon the lower animals. In his preface, he enters at some length, into the argument in favor of this method, and reviews some of the principal objections that have been raised against it. In reply to the objections that drugs do not act on the lower animals as on man, he declares that it is untrue, and that the effects though seemingly different, are in reality similar; that the more knowledge we acquire, the fewer exceptions remain unexplained, and that the whole matter is in all probability subject to laws whose development will greatly aid in our explanation of various obscure clinical phenomena." He then gives some of what he believes to be the laws governing the action of drugs; points out the distinction between quantity and quality, the variations of susceptibility according to the predominance of one or another organ or organs, the effects of habitude in certain cases, the effects of antagonistic action of the same agent in others, etc. He lays down two of the principal laws which govern the susceptibility to the action of drugs, the first of which is that the more highly specialized a system is, the more readily is it affected. Thus the cerebrum of man is more specialized than that of any other animal and hence the cerebral action of drugs is much more marked in him than in the lower animals. He gives as the second law, that great differences in function in a system affect its relation to drugs; as an illustration of this law he calls up the differences of function of the alimentary canal in herbivora and carnivora or omnivora as affecting the action of medicine on the digestive system. A converse to this law is, that systems like the circulatory which are but little specialized and have the same functions, are similarly affected in all animals.

Dr. Wood admits that there are apparent exceptions to these laws, but pleads that such seeming contradictions ought not to weigh against the great mass of evidence upon the other side. It seems to us that the best line of defence against all such arguments, is to admit our ignorance of the special points of comparative physiology which are involved, an ignorance which is daily becoming less, and which, though it now renders possible these unaccountable facts, will in time, be largely done away with. It is certainly the best reply to the denial of the usefulness of vivisections, for it demonstrates their necessity. And this difference in the physiological peculiarities of different species of animals, is perhaps one of the features of the subject that is most hopeful for the future, as enabling us to isolate special actions and control results in ways that might otherwise be impossible.

The humanitarian objection to vivisection experiments is only a valid one as against useless repetitions and ill-directed and ignorant attempts. If human life is of more value than that of other animals, experimentation of this kind is not only justifiable, but necessary, for we can obtain the knowledge of the true physiological action of remedial agents requisite for their intelligent use for the relief of human suffering and the salvation of human life in no other way. We may never understand the ultimate action of this or that agent in producing vital change, but we can follow out the mechanism by which this action is produced to a very great extent, much greater in fact than is perhaps generally assumed. In this lies the only hope we have of a truly rational therapeutics.

The plan followed by the author in this work is to introduce each class with a few general remarks, and then take up each substance separately, giving first, though briefly, its physical properties, then its physiological action as far as known, quoting and criticising various authorities, and offering the conclusions that seem most justifiable from their data. All this is stated at length in the case of the more important drugs, the action on each system of organs of the body being mentioned separately, and the attention that is given to this part of the subject, as we have said before, is the special feature of the work. Next in order is an account of the therapeutic value of each drug, generally quite full and complete, followed by remarks on its toxicology, and the details regarding its administration, with a list of the pharmaceutical preparations, their dose, etc. All these points are in general very fully stated, and the work is even better adapted for practical teaching and reference than many others that are less scientific. It is impossible in noticing this portion of the volume, to go into extended discussions, but the following are a few of the special points that have attracted our attention in its examination.

In the author's first class of remedies, the astringents, the most noticeable point is the inclusion in this group, of the salts

of silver, mainly, we suppose, on account of the local use of the nitrate in various inflammatory affections, especially of mucous surfaces. Looking at it and the other salts in the light of their supposed constitutional effects in nervous diseases, we should prefer to place it among the alteratives, and the special action it exerts other than as an astringent, when applied locally, seems to us to cast some doubt on the propriety of the position here assigned it. Dr. Wood himself admits this action, and taken altogether, nitrate of silver appears to us to be no more, if as much, entitled to a place among astringents than several other remedies, the mineral acids for example.

The discussion of the physiological action of quinine is very complete in the main, but the remarks in regard to its influence on the circulation might be more full and more nearly up to the present condition of our knowledge than they are. The researches of Briquet, Schlockow and Eulenberg are alluded to, and the general conclusion reached that in large doses it is sedative to the circulation by direct influence on the heart, and probably also in other ways. The action of the drug upon the cerebral circulation is not mentioned except in a foot note, where it is stated that the evidence in regard to this action is unsatisfactory and insufficient. There have been some investigations, not too recent to be mentioned here, those of Chirone, for example, that might perhaps throw some additional light on this subject.

Dr. Wood discusses at length the discovery of Binz, as to the effect of quinine upon the white blood corpuscles, and concludes that any theory built upon this fact would, in the light of our present knowledge, be premature. Its action upon the uterus he also considers in some measure to be still a matter *sub judice*. The same he holds to be the case as regards the theories suggested by the discovery of Dr. Bence Jones of a fluorescent substance similar to quinine, in the animal organism.

In the account of phosphorus we find no mention of phosphide of zinc, a preparation that has assumed some importance in the treatment of nervous diseases, and which perhaps affords us one of the better means of introducing phosphorus into the system, and obtaining its constitutional effects.

The discussion as to the action of alcohol and its uses, seems to be a very judicious and correct summary of the principal physiological and therapeutic facts so far known in regard to this substance. Of course it can hardly be complete, so much has been and is constantly being written in reference to this agent. Besides the writers mentioned and quoted in the text, Dr. Wood gives in a foot note quite a lengthy list of authorities for the reader to consult. This plan is followed elsewhere in the work, and adds to its value as a book of reference. In case of nearly all the medicines and especially the narcotic ones, new matter has been added over and above that contained in the former edition, and in some cases the additions are impor-

tant. Thus in the cases of antimony and prussic acid the data in regard to the administration which were omitted before a dose, etc., are contained in this edition. These particulars in the case of Calabar bean however are still unsupplied, and the same is true of the corrosive chloride of mercury. In this last instance the omission implicates still another drug,—the dose of the red iodide of mercury is given as the same as that of corrosive sublimate which, as we have said, is not stated. These are rather important practical defects, which we are surprised to see left uncorrected in this second edition, the more so, when we remember having seen them alluded to in previous notices in medical publications.

The analgesic action of belladonna is evidently little valued by our author. Still we think, that it is worthy of consideration, and a considerable experience with the alkaloid, atropia has led us to believe that at least in combination with morphia, it materially aids the anodyne action of the latter, besides modifying by its physiological antagonism its toxic action, and rendering the combined salts safer than morphia alone. We merely mention this as a therapeutic fact in our own experience, which has, however, been noted by others.

In the section on anaesthetics we find no mention of the experiments and notes in relation to the condition of the pupil by Westphal, Schiff, and Budin and Coyne. The statement is made that chloroform first induces contraction and afterwards dilatation of the pupil, while in fact, in at least a large proportion if not a majority of cases, the primary contraction fails and the myosis only ensues subsequent to a primary dilatation. Drs. Budin and Coyne mention no primary contraction and Dr. W. H. Winslow in a very recent paper (*Phil. Med. Times*, Mar. 4) has stated that in his experiments it never occurred. Moreover the order of phenomena had been described by various authors, besides MM. Budin and Coyne without mention of the primary contraction, and we do not know just on what grounds Dr. Wood here assumes its occurrence. A very full and critical *resume* of this subject is contained in Dr. Gradle's paper on the innervation and movements of the iris, published in this JOURNAL in April and July 1875. which memoir must have been known to Dr. Wood.

We are pleased to see that the origination of the method of resuscitation from chloroform narcosis, commonly attributed to nilation, is ascribed to Dr. E. L. Holmes of this city. We were unacquainted with the facts in the case previous to meeting with their statement in this work. We do not see, however, any mention of nitrite of amyl as a means of relief in chloroform narcosis, though its value was sometime ago pointed out by Schueller and has since been tested repeatedly.

The physiological conclusion adopted by our author in regard to the cause of the myosis from Calabar bean is at variance with that reached by Gradle in his critical study of the subject in the

paper to which we have referred, but which is unnoticed in the present work. It appears to us that Dr. Wood in following this policy does so to some extent to the detriment of the value of his book.

The author has added in this edition, among others, the subjects of caffeine, tobacco, arnica, gelsemium, jaborandi, and salicylic acid. All of these are well discussed. We note one omission, however; no particulars are given as to the dose and administration of jaborandi, except incidentally in describing what is known of its physiological action. As this is a new remedy and unfamiliar to medical students, it would have been well to have gone more into details on this point.

A very useful and important section on the physical forces used in therapeutics has also been added to this edition. In this are considered two agents, cold and electricity. The temperature of the body is so seldom lowered and the indications for its restoration are so plain to all practical common sense, that the subject of the medical application of heat is only alluded to. The use of cold, locally, as a tonic and in fever is, on the other hand, quite fully treated. The chapter on electricity gives in a brief, practical way, the principal physical and physiological facts in regard to this agent, and its use in diagnosis and therapeutics. Dr. Wood avoids all appearance of the enthusiasm that he has described and condemned in others, in regard to its use in therapeutics, and it may be understood that all that is said here in favor of its value is beyond cavil. The chapter is certainly a safe guide in this respect to the practitioner. He expresses very properly in our opinion, a doubt as to the propriety of applying the galvanic current to the brain; the good it may perhaps sometimes accomplish being more than balanced by the danger of its doing harm, hence it should never be advised in a work of this kind. His skepticism in regard to the so-called galvanization of the sympathetic is partly justified, more so perhaps than his positiveness of statement, as to its absolute uselessness. It is plain enough that we cannot isolate the current to any one of the cervical nerves, any more than to many other bodily organs, but it seems not improbable that in some cases it may be affected with advantage. We have ourselves seen instances in which galvanization directed with the view of affecting a cervical nerve, was promptly and surprisingly effective in bringing about the result intended, such, for example, as the relief of a spasmodic stricture of the œsophagus by electrization directed to the pneumogastric, which can hardly be easier or more certain than that of the sympathetic. In our mind, at least, the value of the procedure of electrization of the sympathetic in some cases, is under-rated by Dr. Wood, and we prefer to keep a middle course between the enthusiasts and skeptics in this matter. It may be safer, however, to discourage any very general application of electricity to the sympathetic as well as to the brain. Another point worthy of notice in this chapter is

the omission of any mention of the therapeutic value of electricity in rheumatism, articular and muscular, which is in our opinion, well established.

In our notice of some of the defects, or what appear to us to be such, of Dr. Wood's book we do not wish to convey the impression that we have not a very high opinion of its value and usefulness. It is, in many respects, the best text-book of its kind that we have as yet met with, and the only one in our language that has struck out decidedly in the right direction. It may be called a treatise on rational physiological therapeutics as distinguished from those that follow the more exclusively empirical methods in the ordinary medical sense and usage of the word.

We know of no better book in the English language on this special subject, to recommend to the student or the practitioner. The rapid exhaustion of the first edition was of itself a sufficient evidence that it met a want of the profession, and we trust that a third edition will be speedily required.

IV. THE VASO-MOTOR NERVOUS APPARATUS.*

LECONS SUR L'APPAREIL, VASO-MOTEUR (PHYSIOLOGIE ET PATHOLOGIE) Faites a la Faculte de Médecine de Paris. Rédigées et Publiées par le Dr. H. C. Carville. Tome Second. Paris, 1875. P. 775. (*Lectures on the Vaso-motor Nervous Apparatus, etc.*)

Continued from the last number of the JOURNAL.

M. Vulpian continues his study of the subject of the temperature of the animal body, especially as affected by active changes in the size of the bloodvessels. The influence of *pain*, on animal temperature is considered. It is lowered as a rule under the influence of pain, even if the animal is under the influence of woorara, according to Mantegazza, Heidenhain and others.

But this conclusion is denied by others, especially by Riegel, in a series of very elaborate investigations published chiefly in *Pflueger's Archiv*. But the earlier views of Heidenhain have been re-affirmed by Ostroumoff, in a recent article in *Pflueger's Archiv* for March 1876.*

*Versuche ueber die Hemmungsnerven der Hautgefasse Von Dr. A. Ostroumoff, aus Moskau. *Pfluegers Arch.* March 1876,